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NEW RECORDS OF DISTRIBUTION OF *Pilostyles Hamiltonii*

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At the May 1951 meeting of the W.A. Naturalists' Club, I exhibited a fresh specimen of a rare parasitic flowering plant and its host which had been collected from the bush at Carmel by Mr. N. H. Speck.

The host-plant was the woody papilionaceous shrub, *Daviesia pectinata* (Lindl.), and along its stems numerous small dark brown flowers of the parasitc, *Pilostyles Hamiltonii* C. A. Gardn., protruded from the lesions in the bark.

The history of the occurrence in Western Australia of *Pilostyles* is of unusual interest. *Pilostyles* belongs to the family Rafflesiaceae, a group of parasitic flowering plants distributed in the Indo-Malayan region, tropical America and tropical Africa. All the members of the family parasitise stems or roots of certain trees or shrubs to such an extent that the root and shoot systems of the parasites have become reduced to very simple colourless tissues ramifying through the bark of their hosts. The flowers, however, are not always reduced or modified from basic floral structure. One species, *Rafflesia Arnoldii,* found on the surface roots of certain jungle trees in Sumatra, sends forth from the host bark a spectacular flower 40 inches in diameter—the largest known flower in the plant kingdom.

In March 1944, Mr. C. D. Hamilton, the District Forester at Mundaring, collected near the Greystones pine plantation a branch of *Daviesia pectinata* with a peculiar stem eruption. The brown protuberances in the eruptions proved to be the flowers of one of the Rafflesiaceae, and the parasite was described by the Government Botanist, Mr. C. A. Gardner, as a new species of the genus *Pilostyles (Journ. Roy. Soc. W.A.,* vol. 32, 1948, p. 77).

This was the first record of a species of Rafflesiaceae in Australia and was of particular interest as the other 15 species of *Pilostyles* are scattered through South and North America while closely allied genera are found in tropical Africa and Persia.

What is of immediate interest to us, of course, is the distribution of this rather inconspicuous plant found at Mundaring. It has been repeatedly found on *Daviesia pectinata* in the Greystones area, but only this year, 1951, has it been reported and collected from other localities and from other species of *Daviesia*.

Mr. C. D. Hamilton found infected plants of *Daviesia inerassata* at Kirup in January 1951. Mr. Speck collected *Pilostyles* on

Fig. 1.—Heavy infestation of *Pilostyles Hamiltonii* on *Daviesia pectinata*, from Bedfordale. Notice the characteristic way in which the flowers of the parasite emerge from the tissues of the host. (Half natural size).

D. pectinata, D. polyphylla and *D. rhombifolia* from Carmel in May, and reported that at least 50% of the plants of *D. pectinata* on his property were heavily infected. Mr. A. Notley collected infected shoots of *D. rhombifolia* from Gosnells, between the Cascades and the Sixty Foot Falls, also in May. Members of the W.A. Naturalists' Club (Miss J. Bungert and Mr. W. H. Butler) found infected plants of *D. pectinata* and *D. rhombifolia* during a Club excursion in the Wongong-Bedfordale area on June 3, and Miss J. Bungert also on the same two species at Parkerville on August 12. Here the infected hosts were growing within a few feet of each other. The latest record is of its occurrence at Donnybrook on *Daviesia incrassata*. The parasite appears only to infect species of *Daviesia*—a genus of the family Papilionaceae of the order Leguminoseae. The American and African Rafflesiaceae likewise are restricted in their host-range to the Leguminoseae although they parasitise species from the three families of that order.

More intensive searching for this strange plant will probably show it has a fairly wide distribution in the south-west of Western Australia, and even extending, perhaps, to the eastern States. *Daviesia rhombifolia* and *D. polyphylla* are confined to the Darling scarp and Sussex district but *D. pectinata* ranges from Murchison River to King George's Sound, and also from South Australia to Victoria. *D. incrassata* extends through the selerophyllous forest from the Swan River to King George's Sound and eastward to the

Fig. 2.—Enlargement of flower buds of *Pilostyles Hamiltonii* (x 8) showing details of their outer structure and shape.
—Photos, J. Gentilli.

Bight. Species of *Daviesia* are found in all the Australian states and in Tasmania. As *Pilostyles Hamiltonii* very likely parasitises more than the four known host species it may occur extensively through the forest and scrub regions of southern Australia. It is just possible that *Pilostyles* infects other genera of the Papilionaceae or even genera of the Mimoseae and Caesalpinaceae. If this should be the case the parasite's distribution would be even more extensive.

The details of seed germination and establishment of the seedlings of *Pilostyles* on its host are not known. Here is a problem that awaits investigation by a professional or amateur botanist.

THE LIFE HISTORY OF THE BROWN-TAIL MOTH, *Pterolocera isogama*

By JEAN McGAURAN, "Bunya Bunya," East Yuna.

The brown-tail moths were first recorded here, in the 1949 season, on June 22, their appearance coinciding with the opening rains. In the evening, almost immediately after a steady fall of rain, numbers of the moths came fluttering around the light. They measured nearly two inches across the fully expanded wings and were brown in colour, the females being somewhat lighter than the males.

Many eggs were laid. They were about the size of a pin-head and were of two colours, some being pinkish, others pinkish-grey. Some eggs were kept for study.

On July 20—28 days later—I found tiny, very hairy, grey caterpillars hatching. I reared two of them trying at all times to provide them with, as near as possible, natural conditions. For food I offered the caterpillars mallee leaves and various grasses and herbs, but these were ignored. Leaves of curaras, jams and wattles (namely species of *Acacia)* were readily accepted, and on them the caterpillars fed throughout the larval stage.

The caterpillars moulted several times in the early stages, but after they had begun to develop their green and blue markings (when they were about three-quarters of an inch long) I did not see any discarded skins.

One caterpillar grew more quickly than the other, and by September 26 measured nearly two inches in length. The other caterpillar was somewhat smaller. They had grey, blue, yellow and green markings on the upper portion of the body. Their sides, below the pointed tufts of white hairs indicated in the sketch, were black. Claspers and legs were reddish-brown. The ventral surface was reddish-brown with black markings.

The larger caterpillar went underground to pupate on October 4. It dug a hole apparently straight down, pushing the earth up and